

Table S2
Determination of the concentration of active MBP-antiABA-scFv.

Response interval	Flow rate ($\mu\text{l}\cdot\text{min}^{-1}$)	$L_m \times 10^{-5}$ ($\text{m}\cdot\text{s}^{-1}$)	dR/dt_{reg} ($\text{RU}\cdot\text{s}^{-1}$)	χ^2_{reg}	dR/dt_{fit} ($\text{RU}\cdot\text{s}^{-1}$)	MTL
I: 100-200 RU [A _{bulk}]=32.098 nM L _r =1.307x10 ⁻⁵ m·s ⁻¹ χ ² _{fit} =0.0048	2	0.32	7.53	0.10	7.48	0.80
	5	0.43	9.53	0.04	9.63	0.75
	10	0.54	11.5	0.04	11.44	0.70
	25	0.73	14.02	0.01	14.03	0.64
	50	0.90	16.08	0.00	16.08	0.58
	100	1.1	17.3	0.01	17.28	0.54
II: 200-300 RU [A _{bulk}]=30.759 nM L _r =1.290x10 ⁻⁵ m·s ⁻¹ χ ² _{fit} =0.0065	2	0.32	7.23	0.03	7.13	0.80
	5	0.43	9.23	0.04	9.27	0.75
	10	0.54	11.1	0.04	11.11	0.71
	25	0.73	13.75	0.04	13.78	0.64
	50	0.90	15.85	0.08	15.95	0.58
	100	1.1	17.35	0.09	17.25	0.55
III: 300-400 RU [A _{bulk}]=30.791 nM L _r =1.1x10 ⁻⁵ m·s ⁻¹ χ ² _{fit} =0.002	2	0.32	7.08	0.02	7.03	0.78
	5	0.43	9.02	0.04	9.06	0.72
	10	0.54	10.8	0.03	10.77	0.67
	25	0.73	13.21	0.09	13.21	0.60
	50	0.90	15.08	0.06	15.14	0.54
	100	1.1	16.31	0.08	16.27	0.51
IV: 400-500 RU [A _{bulk}]=30.849 nM L _r =1.00x10 ⁻⁵ m·s ⁻¹ χ ² _{fit} =0.002	2	0.32	6.9	0.04	6.87	0.76
	5	0.43	8.74	0.04	8.79	0.70
	10	0.54	10.39	0.01	10.39	0.65
	25	0.73	12.7	0.07	12.65	0.58
	50	0.90	14.37	0.13	14.41	0.52
	100	1.1	15.41	0.21	15.43	0.49
V: 500-600 RU [A _{bulk}]=30.692 nM L _r =0.846x10 ⁻⁵ m·s ⁻¹ χ ² _{fit} =0.0145	2	0.32	6.97	0.07	6.77	0.73
	5	0.43	8.43	0.04	8.57	0.65
	10	0.54	9.98	0.07	10.03	0.60
	25	0.73	12	0.04	12.04	0.53
	50	0.90	13.56	0.06	13.56	0.46
	100	1.1	14.5	0.07	14.43	0.41
VI: 600-700 RU [A _{bulk}]=30.622 nM L _r =0.7815x10 ⁻⁵ m·s ⁻¹ χ ² _{fit} =0.0037	2	0.32	6.58	0.09	6.51	0.71
	5	0.43	8.11	0.11	8.19	0.66
	10	0.54	9.52	0.07	9.54	0.61
	25	0.73	11.41	0.04	11.38	0.54
	50	0.90	12.81	0.15	12.76	0.48
	100	1.1	13.49	0.11	13.54	0.45

The slopes of sensorgram curves (dR/dt_{reg}) at different flow rates were determined by linear regression in each chosen response interval (I-VI). The χ^2_{reg} values correspond to the fit of the linear regression. The mass transport coefficient (L_m) was calculated according to equation 1. The concentration of MBP-antiABA-scFv ($[A_{\text{bulk}}]$) and the coefficient of reaction flux (L_r) were determined by globally fitting the data obtained at different flow rates to equation 2, using dR/dt_{reg} as slopes for each response interval. Ideal slopes (dR/dt_{fit}) were obtained by introducing the calculated L_m , L_r and

A_{bulk} values into equation 2. The measured concentration of *active* MBP-antiABA-scFv, calculated as the average of $[A_{\text{bulk}}]$ from each response interval, is 30.97 ± 0.559 nM, which corresponds to 21.8% activity of the total purified protein in the sample (determined by measuring the optical density at 280 nm). The diffusion coefficient for MBP-antiABA-scFv was calculated to be $5 \times 10^{-11} \text{ m}^2 \cdot \text{s}^{-1}$. The concentrations of MBP-antiABA-scFv determined by measuring the UV absorbance at 280 nm was $142 \text{ nM} / 10.6 \mu\text{g} \cdot \text{ml}^{-1}$.